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Docket No.: 50212-514



PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of : Customer Number: 20277
Motoki Kakui, et al. : Confirmation Number: 8492
Serial No. 10/615,389 : Tech Center Art Unit: 3663
Filed: July 9, 2003 : Examiner: Diacou, Ari M.

FOR: OPTICAL AMPLIFICATION MODULE OPTICAL AMPLIFICATION APPARATUS AND
OPTICAL COMMUNICATIONS SYSTEM

REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is submitted in response to the Examiner's Answer mailed October 23, 2006.

ARGUMENT

Appellants submit that the rejections under the first paragraph of 35 U.S.C. § 112 imposed by the Examiner are not legally viable and solicit the Honorable Board to reverse the rejections for the reasons set forth in the Appeal Brief submitted September 19, 2006 and for the reasons set forth herein. The scope of enablement provided to one skilled in the art by the present disclosure is commensurate with the scope of protection sought by the present claims. *AK Steel Corp. v. Sollas*, 344 F.3d 1234, 1244, 68 USPQ2d 1280, 1287 (Fed. Cir. 2003).

With respect to the rejection under the fourth paragraph of 35 U.S.C. § 112, Appellants do not contest this rejection and the Examiner, at page 7 of the Examiner's Answer, indicated that the rejection would be overcome by an amendment that changes the dependency of claims 39 and 41. Therefore, Appellants solicit the Honorable Board to exercise its discretion pursuant to 37 C.F.R. § 41.5(c) and include an explicit statement that this rejection can be overcome upon amending claim 39 to depend from claim 3.

The rejection of claims 2 through 12, 28 through 34, 39, 41 and 45 through 79 under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support.

The Examiner improperly maintains the rejection based on the conclusion that the present claims recite an "open-ended range" or "open-ended infinite range". The Examiner considers the claimed signal wavelength band is "open-ended" on the basis of the wording "1620 nm or longer" but the Examiner completely ignores the express language preceding this range. Each of the independent claims describes, in pertinent part, an optical amplification module for collectively amplifying signal light having multiplexed a plurality of channels in a single wavelength band including a wavelength

region having a wavelength of 1610 nm or longer. Appellants submit that the recited range for the applicable wavelength is exemplary and the Examiner's unilateral "open-ended" conclusion to the range goes beyond what one of ordinary skill in the art would have understood the range to mean. As one having ordinary skill in the art would have understood from the context of the present disclosure, and indeed from the express language of the claims, i.e., "a signal wavelength band including a wavelength region having a wavelength of 1610 nm or longer" simply denotes a wavelength region to be employed. One having ordinary skill in the art would have understood that the limitation does not suggest that any and all wavelength regions over 1610 nm may be employed as "a single wavelength band."

Moreover, as expressly set forth in each independent claim, the invention is concerned with amplifying signal light. In other words, the indicated wavelength range is, as the claims recite, for signal light. The Examiner's theoretical extrapolation of the claimed invention ignores the explicit claim requirement for amplifying signal light, because microwave radiation and radio waves, for example, are not amplification targets of the claimed invention involving signal light amplification, as would have been understood by one having ordinary skill in the art. The claimed signal light is neither "microwave" nor "radio radiation". In the Examiner's comment at page 8, third full paragraph, the Examiner argues that microwaves and radio waves are "forms" of light because all electromagnetic radiation is a "form" of light. Appellants respectfully submit that the present claimed subject matter does not recite forms of light, but only signal light. The Examiner's illogical conclusion is equivalent to the following: a mammal is a living being; a fish is a living being, and, therefore, a fish must be a mammal.

Similarly, the Examiner's interpretation that the claimed invention is inclusive of " $f=0$ " is unrealistic and inconsistent with how one having ordinary skill in the art would have interpreted the

claimed invention. This is because the claimed invention relates to amplifying signal light and, hence, one having ordinary skill in the art would have understood that f could not equal 0. Indeed, a “signal” with $f=0$ does not exist. The Examiner conveniently and unrealistically assumed a wavelength of infinite length. Based upon that unrealistic assumption, the Examiner decided that the claimed invention includes $f=0$. Again, the Examiner ignores the fact that the claims are limited by the wording “signal light”. The Examiner conveniently over expanded the scope of the claimed invention in an unrealistic manner.

Based upon the foregoing Appellants submit that one having ordinary skill in the art would have no difficulty practicing the claimed invention armed with the supporting specification without undue experimentation. Appellants, therefore, submit that the imposed rejection of claims 2 through 12, 28 through 34, 39, 41 and 45 through 79 under the first paragraph of 35 U.S.C. § 112 is not legally viable.

The rejection of claims 8 and 10 under the first paragraph of 35 U.S.C. § 112 for lack of enabling support.

The Examiner maintains that the disclosure does not enable the rejected claims because the expression “wherein the bandwidth exceeds 50 nm” is open-ended and inclusive of “ $f=0$ ” and “ $f=\infty$ ”. Appellants disagree.

Dependent claims 8 and 10 simply indicate that the wavelength bandwidth, as recited in independent claims 7 and 9, yields a relative gain non-uniformity of less than 25% in a net gain spectrum of the Bi type optical waveguide in a wavelength bandwidth exceeding 37 nm. The wavelength bandwidth includes a width having a relative gain non-uniformity of less than 25% in a net gain spectrum of the Bi type optical waveguide and, therefore, not conceptionally linked to f as alleged

by the Examiner. Even more, it does not include, as the Examiner alleges, gamma rays, x-rays, ultraviolet radiation, radiation with a wavelength 380 nm and 740 nm, microwave radiation, or radio waves. The Examiner's interpretation of the claimed invention is inconsistent with how one having ordinary skill in the art would have interpreted the claimed invention. The Examiner's theoretical extrapolation of the claimed invention beyond signal light is unjustified and inconsistent with the manner in which one having ordinary skill in the art would have interpreted the claimed invention.

Phillips v. AWH Corp., 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (en banc).

Based upon the foregoing Appellants submit that the imposed rejection of claims 8 and 10 under the first paragraph of 35 U.S.C. § 112 is not legally viable.

The rejection of claims 2 through 10, 28 through 34 and 45 through 65 under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support.

The Examiner states that the specification, while being enabling for an amplifier with a gain non-uniformity of 18%, does not reasonably provide enablement for a gain non-uniformity of 0%. However, the claimed wording "so as to yield a relative gain non-uniformity of less than 25%" means that the relative gain non-uniformity is not over 25%, and does not mean a 0% setting. Regarding the gain non-uniformity of 0%, it seems that the Examiner is requiring a disclosure of a permanent and complete "zero" with respect to the gain non-uniformity. The Examiner's position is unrealistic.

The claimed invention is directed to control. That is, it is possible to bring the gain non-uniformity close to zero %, but it is not actually set to zero %. Also, the meaning of "zero" is elusive. For example, a gain non-uniformity that instantaneously reaches "zero", the instance where 0%- gain non-uniformity is achieved at very narrow wavelength range, or the case that where 0.1 gain non-uniformity is inclusive of "zero".

The Examiner again did not provide a basis upon which to predicate the ultimate legal conclusion that one having ordinary skill in the art would not have been able to practice the claimed invention, along with the supporting specification, without undue experimentation. The Examiner did not overcome the presumption of enablement as by advancing technological reasoning to doubt the statements in the specification, or by establishing that the claimed invention is inherently unbelievable or involves implausible scientific principles. Appellants reiterate their reference to *In re Cortright*, 165 F.3d 1353, 49 USPQ2d 1464 (Fed. Cir. 1999).

To summarize, the wording “so as to yield a relative gain non-uniformity of less than 25%” is clearly distinguishable from “so as to yield a relative gain non-uniformity of 0%” as interpreted by the Examiner. This is because the claim wording merely describes a target value of amplification control and, hence, would have been understood by one having ordinary skill in the art to mean “so as not to yield a relative gain non-uniformity of 25% or larger”. One having ordinary skill in the art would have understood, it is not an object of the present invention to yield a relative gain non-uniformity of 0%. Simply put, the Examiner’s interpretation far exceeds the scope of the rejected claims by intentionally assuming an impossible case where a relative gain non-uniformity is zero.

The bottom line is one having ordinary skill in the art would never have interpreted the claimed invention to encompass a relative gain non-uniformity of 0%. This is because, technologically speaking, it is inconceivable that one having ordinary skill in the art would have interpreted the claimed invention to encompass an impossible case where the relative gain non-uniformity is 0%. *Phillips v. AWH Corp., supra*. On the other hand, apart from interpreting the claims unreasonably and inconsistent with the written description of the specification, and inconsistent with how one having ordinary skill in the art would have interpreted the claimed invention, the Examiner did not provide

any support for the asserted legal conclusion of non-enablement under the first paragraph of 35 U.S.C. § 112.

Appellants, therefore, submit that the imposed rejection of claims 2 through 10, 28 through 34 and 45 through 65 under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support is not legally viable.

Conclusion

Based upon the foregoing Appellants submit that the Examiner's rejections under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support are based upon a clearly erroneous claim interpretation to encompass, for example, an infinite wavelength band, and ignores the express claim limitation "signal light". Appellants further submit that the Examiner did not establish a *prima facie* basis to deny patentability to the claimed invention under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support. Appellants, therefore, submit that each of the Examiner's rejections under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support is not legally viable.

Based upon the arguments submitted *supra*, Appellants submit that the Examiner's rejections under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support are not legally viable. Appellants, therefore, solicit the Honorable Board to reverse each of the Examiner's rejections under the first paragraph of 35 U.S.C. § 112 for lack of adequate enabling support.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. 1.17 and 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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